CLAIM AMENDMENTS

Please amend the claims to read as provided in the following claim listing:

1.-2. (Canceled)

3. (Currently amended) ~~A method according to Claim 1, further comprising~~ A method to receive electromagnetic radiation from a signal transmitter in the presence of a source of electromagnetic noise in a borehole telemetry system comprising:

aligning a directional signal sensor with a field produced by an electromagnetic signal transmitter in a borehole, wherein said aligning includes using a three-axis sensor as the signal sensor and aligning the signal sensor by weighting and summing the outputs of the three-axis sensor;

aligning a directional noise sensor with a field produced by a source of electromagnetic noise, and

using an output from the noise sensor to reduce noise from an output of the signal sensor.

4. (Currently amended) ~~A method according to Claim 1, further comprising~~ A method to receive electromagnetic radiation from a signal transmitter in the presence of a source of electromagnetic noise in a borehole telemetry system comprising:

aligning a directional signal sensor with a field produced by an electromagnetic signal transmitter in a borehole,

aligning a directional noise sensor with a field produced by a source of electromagnetic noise, wherein aligning the directional noise sensor includes using a three-axis sensor as the noise sensor and aligning the noise sensor by weighting and summing the outputs of the three-axis sensor, and

using an output from the noise sensor to remove noise from an output of the signal sensor.

5. (Currently amended) ~~A method according to Claim 1, further comprising:~~ A method to receive electromagnetic radiation from a signal transmitter in the presence of a source of electromagnetic noise in a borehole telemetry system comprising:

aligning a directional signal sensor with a field produced by an electromagnetic signal transmitter in a borehole,

aligning a directional noise sensor with a field produced by a source of electromagnetic noise, wherein said aligning of the directional signal and noise sensors includes:

using one three-axis sensor as both the signal sensor and the noise sensor,

aligning the signal sensor with a field produced by a signal transmitter in a borehole by weighting and summing the outputs of the three-axis sensor, and

aligning the noise sensor with a field produced by a noise source by weighting and summing the outputs of the three-axis sensor, and

using an output from the noise sensor to reduce noise from an output of the signal sensor,

6.-31. (Canceled)

32. (New) An electromagnetic borehole telemetry system that comprises:

a multi-axis sensor that produces an output for each axis; and

an adaptive filter that combines the outputs to form a signal from a simulated single-axis sensor oriented in a direction that is best for receiving a borehole telemetry signal.

33. (New) The system of claim 32, further comprising:

a second adaptive filter that combines the outputs to form a signal from a simulated single-axis sensor oriented in a direction that is best for receiving a noise reference signal.

34. (New) The system of claim 33, further comprising a noise canceller that employs the signal from the second adaptive filter to improve the signal to noise ratio of the signal from the first adaptive filter.

35. (New) The system of claim 32, further comprising:

a second multi-axis sensor that produces an output for each axis; and

a second adaptive filter that combines the outputs from the second multi-axis sensor to form a signal from a simulated single-axis sensor oriented in a direction that is best for receiving a noise reference signal.

36. (New) The system of claim 35, further comprising a noise canceller that employs the signal from the second adaptive filter to improve the signal to noise ratio of the signal from the first adaptive filter.

37. (New) The system of claim 32, wherein the multi-axis sensor is a three-axis magnetometer.

38. (New) The system of claim 32, wherein the multi-axis sensor includes a magnetometer and an electric field detector.

39. (New) The system of claim 32, further comprising an electromagnetic signal transmitter to transmit the telemetry signal.

40. (New) A borehole telemetry method that comprises:

detecting components of an electromagnetic field with a multi-axis sensor that produces an output for each axis; and

combining the outputs to form a telemetry signal from a simulated single-axis sensor oriented in a direction that is best for receiving a borehole telemetry signal.

41. (New) The method of claim 40, further comprising:

combining the outputs to form a noise signal from a simulated single-axis sensor oriented in a direction that is best for receiving a noise reference signal.

42. (New) The method of claim 41, further comprising combining the noise signal with the telemetry signal to improve a signal-to-noise ratio of the telemetry signal.

43. (New) The method of claim 40, further comprising:

detecting components of an electromagnetic field with a second multi-axis sensor that produces an output for each axis; and

combining the outputs from the second multi-axis sensor to form a noise signal from a simulated single-axis sensor oriented in a direction that is best for receiving a noise reference signal.

44. (New) The method of claim 43, further comprising combining the noise signal with the telemetry signal to improve a signal-to-noise ratio of the telemetry signal.

45. (New) The method of claim 40, wherein the multi-axis sensor is a three-axis magnetometer.